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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/719,425      | 11/21/2003  | Jack W. Marple       | SP-1754.1US         | 3401             |

  

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| 20875                        | 7590 | 06/01/2007 |
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| EXAMINER     |  |
| RHEE, JANE J |  |

  

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| ART UNIT | PAPER NUMBER |
| 1745     |              |

  

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/719,425

**Applicant(s)**

MARPLE, JACK W.

**Examiner**

Jane Rhee

**Art Unit**

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 5/8/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 27 and 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27,29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/8/2007 has been entered.

### ***Rejections Repeated***

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 27-28 are rejected under 35 U.S.C. 103(a) as obvious over Webber (5219683) in view Callahan et al. (6602593).

As to claim 27, Webber discloses an electrochemical battery cell comprising a housing, a negative electrode, a positive electrode and an electrolyte disposed within the housing (col. 3 lines 41-50), and a separator disposed between the negative and positive electrodes wherein the cylindrical Li/FeS.sub.2 cell with a spiral wound

electrode assembly, the separator is a microporous membrane comprising polyethylene (col. 3 lines 41-50 and col. 5 lines 31-32).

As to the microporous membrane thickness of less than 22 $\mu$ m and maximum effective pore size of 0.08 $\mu$ m to 0.20 $\mu$ m, Webber fail to disclose that the separator comprises a thickness of less than 22 $\mu$ m and a maximum effective pore size of 0.08 $\mu$ m to 0.20 $\mu$ m. Callahan et al. teaches microporous membrane thickness of less than 22 $\mu$ m and an average pore size of from 0.05 to about 2 microns (col. 3 line 30-33) for the purpose of providing a microporous membrane having improved split resistance (col. 3 lines 26-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide Webber with a microporous membrane having a thickness of less than 22 $\mu$ m and an average pore size of from 0.08 $\mu$ m to 0.20 $\mu$ m in order to provide a microporous membrane having improved split resistance (col. 3 lines 26-27) as taught by Callahan et al.

Referring to the tensile stress of at least 1.75kgf/cm, dielectric breakdown voltage of at least 2400 volts, and a BET specific surface area of 4.0 to 1.5m<sup>2</sup>/g, Webber discloses a polyethylene microporous membrane (col. 5 line 44 ) as desired by the applicant. Since Webber discloses the same materials desired by the applicant, it is expected that separator has a the tensile stress of at least 1.75kgf/cm, dielectric breakdown voltage of at least 2400 volts, and a BET specific surface area of 4.0 to 1.5m<sup>2</sup>/g.

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As to claim 28, referring to the interfacial capacity of at least 710mAh/cm<sup>sup.3</sup>, Webber discloses a metallic lithium anode material and an iron disulfide cathode active material (col. 3 line 46, col. 5 line 43). Since Webber discloses the same materials desired by the applicant, it is expected that the ratio of cathode interfacial capacity of an electrode assembly interfacial volume of at least 710 mAh/cm<sup>sup.3</sup>.

3. Claims 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webber (5219683) in view Callahan et al. (6602593).

As to claim 29, Webber discloses an electrochemical battery cell comprising a housing, a negative electrode, a positive electrode disposed within the housing, a separator disposed between the negative and positive electrodes, wherein the cell is a cylindrical type Li/FeS<sub>2</sub> cell, with a spiral wound electrode assembly, the separator is a microporous membrane comprising polyethylene and the positive electrode comprises an active material (col. 3 lines 41-50).

Referring to the tensile stress of at least 1.75kgf/cm, and dielectric breakdown voltage of at least 2400 volts, Webber discloses a polyethylene microporous membrane with an average thickness of less than 22um (col. 3 lines 50-51). Since Webber discloses the same materials desired by the applicant, it is expected that separator has the tensile stress of at least 1.75kgf/cm and dielectric breakdown voltage of at least 2400 volts.

As to the positive electrode that comprises at least 95 weight percent of iron disulfide, Webber discloses 91 weight percent of iron disulfide (col. 3 line 46). It would have been obvious to one having ordinary skill in the art at the time applicant's invention

was made to provide 95 weight percent of iron disulfide, since discovering optimum value of result effective variable involves only routine skill in the art in the absence of unexpected results.

Concerning the discharge capacity of at least 2950mAh when discharged at 200mA continuously to 1.0 volt and a discharge capacity of at least 2600mAh when discharged at 1000mA continuously to 1.0 volt, Webber teaches that each cell was discharged on a 300ohm continuous load and the voltage and ampere-hour cathode efficiency were measured (col. 3 lines 57-59). It would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide discharge capacity of at least 2950mAh when discharged at 200mA continuously to 1.0 volt and a discharge capacity of at least 2600mAh when discharged at 1000mA continuously to 1.0 volt, since discovering optimum value of result effective variable involves only routine skill in the art in the absence of unexpected results.

As to the maximum effective pore size of 0.08um to 0.20um, Webber fail to disclose that the separator has a thickness of less than 22um and a maximum effective pore size of 0.08um to 0.20um. Callahan et al. teaches microporous membrane having a thickness of less than 22um and an average pore size of from 0.05 to about 2 microns (col. 3 line 30-33) for the purpose of providing a microporous membrane having improved split resistance (col. 3 lines 26-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide Webber with a microporous membrane having a thickness of less than 22um and an average pore size of from

0.08um to 0.20um (col. 3 line 30-33) in order to provide a microporous membrane having improved split resistance (col. 3 lines 26-27) as taught by Callahan et al.

As to the limitation "the interfacial capacity of at least 720mAh/cm.sup.3" Webber discloses a metallic lithium anode material and an iron disulfide cathode active material (col. 3 line 46, col. 5 line 43). Since Webber discloses the same materials desired by the applicant, it is expected that the ratio of cathode interfacial capacity of an electrode assembly interfacial volume of at least 710 mAh/cm.sup.3

#### ***Response to Arguments***

4. Applicant's arguments filed 5/8/2007 have been fully considered but they are not persuasive.

In response to applicant's argument that Webber fails to disclose an FR6 sized cell, Webber discloses AA-sized jellyroll Li/FeS<sub>2</sub> cells (col. 5 lines 31) which are FR6 sized cells as taught by the applicant in specification page 2 lines 8-9).

In response to applicant's argument that Callahan and Webber fails to disclose all the properties in claims 27 and 29, both Callahan and Webber discloses wherein the separator is a microporous membrane comprising polyethylene. Callahan teaches teaches a microporous membrane having a thickness of less than 22um and an average pore size of from 0.05 to about 2 microns (col. 3 line 30-33) as desired by the applicant. Therefore, it is inherent that the separator taught by Callahan and Webber discloses the tensile stress of at least 1.75kgf/cm, dielectric breakdown voltage of at least 2400 volts, and a BET specific surface area of 4.0 to 1.5m<sup>2</sup>/g.

Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present.

***Conclusion***

This is a request for continued examination of applicant's earlier Application No. 10719425. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jane Rhee whose telephone number is 571-272-1499. The examiner can normally be reached on M-F 9-6.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jane Rhee  
May 22, 2007



PATRICK JOSEPH RYAN  
SUPERVISORY PATENT EXAMINER